

# 30/07/25 Presentation: Neurofunctional Electroacupuncture Mechanism & Neuromapping

Good morning and welcome to part 3 of our neurofunctional electroacupuncture series. Let me quickly gain control of what's going on in my screen and share with you. There are two documents you will receive briefly which contain a summary of what we've done, so far and the key points and another one, the global summary of the methodology.

Okay, here it is, share. So now we should be on the, let me see if I can see the screen properly myself. There it is. I think this is what... what I have prepared. But before this, and it's lunchtime, and you come from working, I try to put myself in your shoes and think about how to give you value.

I'm aware that new material, complex material is challenging and the goal is by no means to achieve mastery of neurophysiology of electroacupuncture in few sessions. It's just to lay the foundation to change the working methodology into one that will reliably and predictively produce superior results.

## A product that...

- **Delivers transformation** and gets results **without overwhelming** your customers
- Meets your clients **where they're at**, and uses the **language they use**
- **Answers their questions...** sometimes **before they even know** they have the question

I'd like to start with this because taking many training programs online, digital marketing, marketing and so on and so forth, I found this one speaker that proposed that the product should deliver transformation, which is always my goal, that we agree. But then from there down, I'm not in agreement with the rest, because it says you have to give results without overwhelming your customers; and I'm sorry to burst bubbles, but you should feel overwhelmed. When you're faced with complexity, when you're faced with precision, with high level engineering, you should feel overwhelmed. Otherwise, you wouldn't be here because you already would have arrived. So that's okay. And I say that's okay as I feel overwhelmed myself often through the many learning processes I put myself through: languages, driving machines, playing sports, etc. so no worries if you feel overwhelmed, you're in good company. Then, this marketer says to "meet your clients where they are at and use the language they use."

I'm very sorry but I have no clue where you are at, nor do I have the time to figure out and find out where you are so I would simply wait for you here and show you the path to get here if you wish to do so; and "use the language they use" well part of my undertaking here is to give you new language so you can handle the new nuances and the new eyes to look at the familiar landscapes of pain with movement and I think that's part of any learning; I mean, language is obviously symbolic and every symbol means something and through that acquisition of symbols simultaneously we are acquiring knowledge so I think you know pretty much the proposal there is to dumb things down, which I don't think it's conducive to truly walk the path of excellence. Finally it tells you to answer the questions of your customers, sometimes before they even know it.

Again I'm very sorry, but I'm not here to answer any question, I'm here to ask new and better questions and to propose you a methodology to ask better clinical questions so you can arrive at better answers. So I candidly disclose my approach and philosophy which apparently collides with the party line of this world of dummies, frankly, in which people have aversion to complexity, while in actuality the universe is complex, life is complex, biological systems are the most complex things in the universe, our job is complex and we should embrace complexity.

So, here it is in a quick summary, the key points we reviewed on part 2 of the presentation, including the knowledge that treatment approaches that are formulaic are characteristically inferior to mechanism-based approaches.

#### Key points from part 2 presentation

- Formulaic treatment approaches are inferior to mechanism-based approaches.
- The best use of “neuro-reflex stimulation” with acupuncture needles and electricity is to be clear about the physiological goals of the intervention.
- Physiological effects of neurofunctional acupuncture interventions include:
  - improves vasomotor control = ↑perfusion
  - removes neuro-motor inhibitions = ↑strength
  - improves spinal sensory-motor-sympathetic integration = ↑articular-muscular-vascular-visceral function
  - improves tissue trophism = ↑tissue healing, ↑cell metabolism, ↑tissue remodeling, ↓adhesions formation
  - nociceptive (peripheral and spinal) neuromodulation = ↓pain perception
  - neuromatrix (supraspinal) neuromodulation = ↓pain perception
- Knowledge of peripheral nervous system anatomy and microanatomy is mandatory to better understand clinical presentations as well as the strategies and techniques involved in Neurofunctional electroacupuncture
- Peripheral nervous system related relevant topics: segmental anatomy, plexus anatomy, fascicular anatomy, nervi nervorum, vasa nervorum, axonal edema, fascicular edema, perineural edema, sensory nerve fibers classification (type I-IV, A/B/C), motor nerve fibers classification (alpha and gamma)

Everybody wants cookie-cutter protocols, again, because people want the illusion of simplicity, even when dealing with the realities of complexity, but that is not the best approach. The best use of our tool that we can call a neuro reflex stimulation with acupuncture needles and electricity is to be crystal clear about the physiological goals of the intervention to begin with and we emphasized in the presentation last time that the most salient neuro reflexes that acupuncture triggers included the improvement of vasomotor control which results in improvement of perfusion, the most desirable physiological function because perfusion brings oxygen, nutrients and allows life.

Then there is one effect that we will talk in the future a lot more in depth which is the removal of neuromotor inhibitions the neuromotor system is foundational to movement, and therefore is involved in any dysfunction of the locomotor musculoskeletal system. Improvement in strength is characteristic after acupuncture treatments due to the removal of neuromotor inhibitions.

Then there was a generic but very powerful and useful modulatory response at segmental level that involves every type of innervation that converges in the spinal cord, sensory, motor, sympathetic vascular, sympathetic visceral and that results in some sort of improvement on all of the tissues supplied by these levels of innervation: articular, muscular, vascular, visceral.

Also acupuncture triggers mechanisms that are mostly local, through cytokines and other substances that act mostly at the local level, improving the metabolism, the trophism of the tissue and therefore improves tissue healing, improves metabolic cellular metabolism, improves tissue remodeling, even bone tissue. I

know a couple of studies, PhD theses (disertations) actually, on rabbits and dogs showing in a fracture model how repeated acupuncture accelerated healing, but not only accelerated, but normalized the organization of the trabecules and that was accompanied by better levels of the enzymes that reflected bone anabolism and, in comparison to the control groups (healing without electroacupuncture). This is phenomenal, and these are some of the effects that we are still not fully using in clinical practice but that they have enough research support to be introduced and this is one of my favorites to use for the treatment of sports injuries, you know to help healing.

Then, finally at the bottom of the physiological effects we had the neuromodulation of nociception which obviously is a peripheral and spinal phenomena as we know nociceptive fibers not necessarily are going to trigger a neuromatrix response, a brain response, as that will depend on the filtering of these signals by the different levels of filtering after the signals have entered the spinal cord; the result of it obviously is a decreased pain perception, which could be the pain intensity, or could be the quality of the pain.

The final physiological mechanism that is engaged by the needles, the response of the nervous system to the needles, is the neuromodulation of the neuromatrix, now is a complex central, modulation involved in many levels, and that results as well in improved or decreased pain perception. We spoke about how knowledge of the peripheral nervous system, anatomy, and microanatomy, is mandatory to better understand nuances on the clinical presentations, and we will see that in the cases in the future, and as well as refine our strategies for treatment.

And as part of these relevant topics, I like to simply highlight them, including the concept of segmental anatomy. The knowledge of plexular anatomy, the knowledge of fascicular anatomy, the knowledge of the nervi nervorum, the vasa nervorum, the structure and the microstructure of the nerve, the concepts of axonal edema, fascicular edema, perineural edema. I didn't talk a lot about it, but the nerve can suffer a distortion of depolarization due to the presence of edema at different levels, which will stem from different reasons and will need perhaps different approaches to be solved. Also we talk about the need to know the variety of sensory fibers, and we talk briefly about classification of sensory nerve fibers, type 1 to type 4, or the ABC classification with the subtypes alpha, beta, gamma, delta, and finally, the motor nerve classification, mostly alpha and gamma.

- Neurophysiology of the peripheral nervous system: movement and motor control is the number one function of the PNS and the whole design is at the service of this function.
- Knowledge of segmental anatomy improves the ability to send signals to a given spinal segment via anterior and posterior divisions of the anterior primary rami (example of femoral n. and obturator n.)
- The neuromapping of “Pain with Movement disorders” is a fundamental technique to select the most relevant nerve pathways involved in a given clinical presentation.
- Dermatome, myotome, sclerotome are the first and fundamental levels of the neuromapping of a pain problem.
- Clear physiological goals are the first step in the subsequent selection of targets and the design of inputs.
- Contemporary Medical Acupuncture or Neurofunctional Electroacupuncture (NFEA) is built on a standardized segmental logic that allows the precise selection of inputs based on a neurofunctional analysis of the problem
- In the NFEA method Peripheral Segmental inputs are combined with Spinal Segmental inputs and with Systemic Regulatory inputs for a best neuroreflex and neurometabolic response.
- Ultimate treatment goal: to put the needles in the best available neuroreactive sites.

Then also we talk about the need to understand the neurophysiology of the peripheral nervous system in terms of movement and motor function because this is the number one purpose of the peripheral nervous system to produce and control movement. And therefore, when we treat pain, we should put that second to the restoration of proper neuromotor function because that is the number one purpose of the whole system. And oftentimes when you correct that, pain goes away because of the existing modulatory mechanisms between somatic motor fibers. And therefore, when we treat pain, we should put that second to the restoration of proper neuromotor function. We talk about the need to know segmental anatomy because that way... you can improve your ability to send signals to the same segment via different divisions. I gave the example of the femoral and obturator nerve, which are both from the same segments, but femoral nerve from the posterior divisions of the anterior rami L2-L4, and the obturator nerve from the anterior divisions of the anterior rami L2-L4.

I also introduced the concept of neuromapping of pain with movement disorders, which is a very broad topic and which involves simply analyzing symptoms and signs from the standpoint of all the subdivisions of the nervous system, starting with the segmental ones, dermatome, myotome, sclerotome. That's the first neuromapping that everybody should be able to do quickly. So, you point to an area of the body, I think I gave the shoulder example, and quickly you say, oh, this is a C4 dermatome, a C5 myotome, and a C6 predominant sclerotome, and then if I say, how about peripheral nerve? Well, this is a cutaneous innervation by the supraclavicular nerves, a motor innervation to the deltoid by the axillary nerve, and branches from axillary and other nerves for the deep tissues, capsule

ligaments, etc. So this double mapping of spinal segmental levels and peripheral nerves is the first and basic methodology of neuromapping that I will show you how it can be combined with neurofunctional analysis and then result in strategies to go from targets to inputs.

## Neurofunctional Electroacupuncture Methodology

### *Goals, Targets, Inputs!!*



So we are in the quest of trying to select the best. Available neuroreactive sites for our needles. And this is akin to chess. You can move one piece, that's it, to one square. Therefore, you have to be extremely careful in what you do. I've been, doing this personal quest, which I'm almost there, doing puzzles in chess.com. I'm in the, 99.8 percentile in the world, about 54,000, so only 54,000 people in the world are better than me doing that, but I plan to reach the 99.9 percentile, which I'm not sure I should be very soon, because I've been at 99.8 forever. The point I want to make is that it's a very good training. For instance, when you get a movement wrong, they take away 15 to 20 points, that then it takes you four correct answers to recover. And I like those challenges, and as painful as it is, it teaches me focus, it teaches me analytical skills that then I can apply to everything. I advise you, if you don't play chess, do yourself a favor, open an account at chess.com and start later today. It's a fantastic gymnastics for the brain, but also it has many commonalities to what we do. For instance, the difference between strategy and tactics. Tactics is the specific movements, strategy is the understanding of the global nuances of the position, the same as a clinical case.

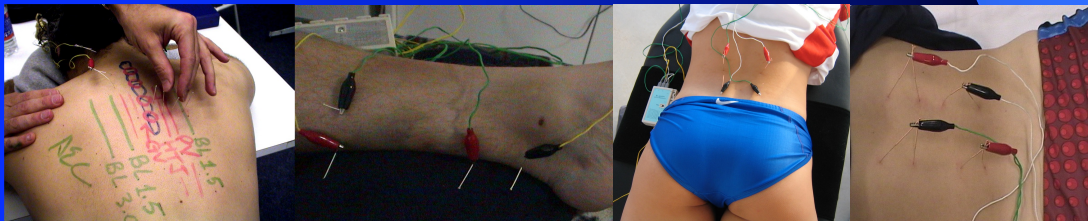
Indeed, I got many of my good ideas from chess, just sharing with you my ideas, and my enthusiasm for the game; my advice to you to use it for your own mental gymnastics.



I think I cover everything, and now I like to jump into what is gonna be the more technical, we're going to get technical and you're gonna see how many of these parts of the conversation are going to converge. A goal is not the same as a target and obviously it's not the same as an input but they're all interrelated.

## Neurofunctional Electrocupuncture Effects

- improve vasomotor control = ↑perfusion
- remove neuro-motor inhibitions = ↑strength
- improve spinal sensory-motor-sympathetic integration = ↑articular-muscular-vascular-visceral function
- improve tissue trophism = ↑tissue healing, ↑cell metabolism, ↑tissue remodeling, ↓adhesions
- nociceptive neuromodulation = ↓pain perception
- pain central neuromodulation = ↓pain perception

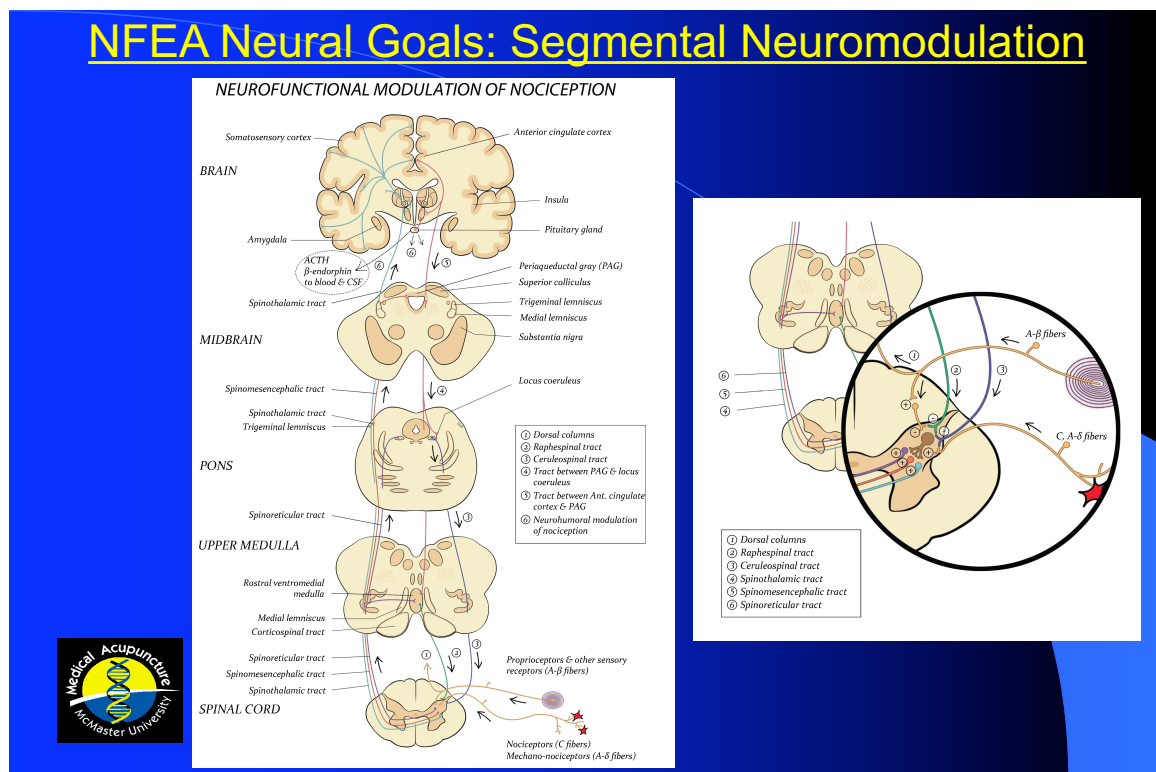


Goals, I will only remind you about this categorization, and this clarity that this hierarchy I have found to be the most useful. So if you think that an area may not be getting appropriate perfusion, put your effort first and foremost in restoring perfusion. If you think that a joint or a set of joints, a kinetic chain, is not acting in a full neuromotor engagement, then restore that and you'll restore it by stimulating the involved muscles. If you're not sure what's going on, by all means, and as part of all treatments, target the segments and a lot of improvement will ensue just from that strategy. Okay, I spent time the other day here, but I wanted to take it a little time and restart today a bit from behind where we finished because I understand this is the most difficult part, the one we are starting to navigate.

Also a disclaimer, I don't think like this I've already integrated all of this and I think very differently like the big chess players, the super grandmasters in the world, when they explain how they operate it is very funny because they all say that they calculate very little and what they mean is not that they calculate very little what they mean is that they calculate subconsciously, the same way I process clinical information as any practitioner with a lot of experience will do; it's like when you're talking you don't think about the words specifically the words come to you when you want to say something and when you have enough practice and enough database they come to you; so let's make no mistake, in the

beginning, the process (of practicing a neurofunctional system) is like speaking a new language, it's painful, it's a little robotic, it's choppy, but little by little it acquires fluency, so that's part of any learning process. Don't try to get it perfect, try to understand enough about the problem that your input has a higher level of intentionality, that's mechanism-based, science-based, and not paradigmatic, regardless of the paradigm that you may be using.

Because a paradigm is accepting that you're acting with a blindfold, while the freedom and the empowerment of using a mechanism-based is phenomenal, and also it allows you to get better feedback and better assessment of the effects of your own interventions, while if you use paradigmatic models you don't know what you may have hit that helped or you don't know what you didn't hit that didn't help; that's why this approach is superior, like analyzing a chess position is superior to just moving the first piece that crosses your mind.



Remember the segmental neuromodulatory mechanisms, remember the local ones and the supra spinal ones? Now I'm going to do this part, how I arrived at the standardized methodology that you can call contemporary medical acupuncture or neurofunctional electroacupuncture which is a product simply of repeated analysis and organization of the information into a not paradigm, but to a system that's anatomy and physiology based.



# Neurofunctional Electroacupuncture Inputs

## 1. Segmental inputs

- ♦ peripheral nerves
- ♦ anterior rami T1-L2
- ♦ posterior rami C1-S4

→ local inputs

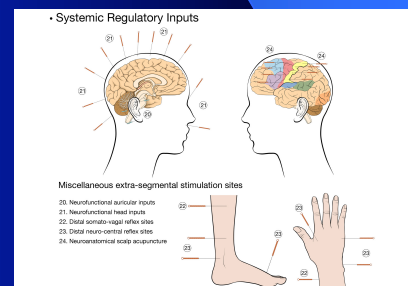
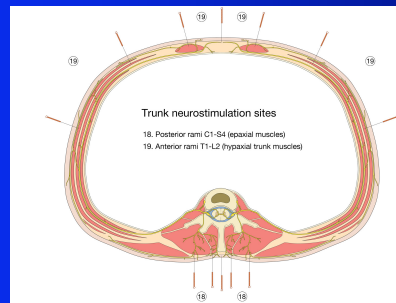
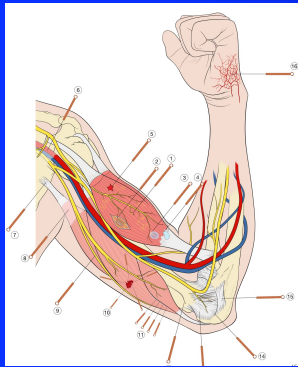
→ anterior trunk inputs

→ axial inputs

## 2. Extra-segmental inputs

- ♦ miscellaneous sites

→ systemic regulatory inputs (& auricular)



Yes, at one point I studied every method of acupuncture: TCM, five elements some Japanese and Korean, French Meridian, and so on and so forth. Then, when I was trying to achieve that minimalistic understanding, one day I realized, okay if we have a problem and we put a needle, that needle either is neurologically connected to the problem or is not, and that was my aha moment, that was my Archimedes' Eureka moment because that discovery, in one stroke (of understanding), organized for me forever and ever all the inputs.

Once I defined the dysfunction I was facing, then I could choose to put needles in the neurologically relevant territory. I could define that neurological territory peripherally or segmentally or I could put the needles elsewhere as extra segmental inputs.

For the segmental inputs you can either put the needles along the trajectory and receptor sites of the peripheral nerves or the plexuses, and these peripheral nerves inputs I called, for language easiness, local inputs because obviously most of those needles are close to the area at fault, although not necessarily right there, and I'll explain that.

Neurological locality, for instance, very quickly, if I have an acromioclavicular joint problem, and I want to put a local input, it doesn't mean I need to put a needle there on the joint, although I can do that, but I can put a needle on the neck posterior to the sternocleidomastoid on the so-called Erb's point, which coincides with the description of LI-18, and anyway it is the trunk of the supraclavicular nerves, that's what it is. So that needle, by virtue of the neurological connection with the area that the brain is perceiving as having the problem, is a local input.

That's what neurological locality means, not physical or anatomical, necessarily, although oftentimes coincides, but neurologically. So anything you put on the trunk of the supraclavicular nerve obviously is going to have an effect on the whole area supplied by the supraclavicular nerves including skin, acromioclavicular joint, acromioclavicular ligaments.

Then the second dimension of a segmental input refers to the shorter branches that come from every segment and that supply the vertebral region, the paravertebral muscles and the intervertebral joints which are the posterior primary rami and the posterior primary rami have names that coincide with the vertebral level where they stem from and we have C2, C3, etc., posterior primary rami. So, again for language easiness, I call these axial inputs because they are located along the spine and for those of you studying classical acupuncture will coincide with Governor Vessel points, with Bladder points, except that this concept of neuroreflex, neuroreactive sides is broader and gives you a better idea of what is going on, and it gives you freedom, it's a free style, and it gives you a better ability to generate inputs as we'll see as we go along.

There is a little subdivision here that you can see in the diagram. It says anterior rami T1-L2. The anterior primary rami mix and mingle into plexuses. We have cervical plexus, brachial plexus, lumbar plexus, sacral plexus, coccygeal plexus. But in between T1-L2 we don't have plexuses, we have just the intercostal nerves that go around the ribs and this category is just for completion, you know, anterior trunk inputs but you could ignore them and just when you need to put needles there you put needles there, it's another type of local input.

So now we have segmental acupuncture that is as easy and as simple as I just said, either you put needles along peripheral nerves that have names and come from specific plexuses or you put needles on posterior primary rami territories that come from segments that are relevant to the problem; whether the relevance is dermatomal, myotomal, sclerotomal or in the reflex vascular sympathetic level. So with only two categories, I have already covered most of the inputs that I use in clinical practice, but then there's another subset and another complementary and even sometimes possible single approach by itself which is to put needles in miscellaneous location with the intention of triggering central effects, so I call that "systemic regulatory inputs" that include auricular inputs and obviously includes the typical classical distal insertion sites that, by the way, are the ones most used in the history of the therapy to this day. When I started studying acupuncture obviously I read all the studies that I could put my hands on and I asked one question which is always the critical one, I said, I don't care what people say they do or why they do it, I want to know what they do for real and then someone such as myself asked that question in a research project, and in that group of practitioners they studied, they found out that the majority of people were doing exactly the same; they were doing LI-4, LV-3, SP-6, KI-3, GB-34, ST-36 and little more.

Now I reverse the question and ask what would happen if I were not to use those neuro reactive sites? I can tell you for a fact, and you probably will say I'm

right, even without having tried that, that if you don't use those points your results are going to be dismal, and you'll be totally right because those are the most powerful neuroreactive sites centrally.

For instance, the distal arteriolar network from the radial artery here on the first interosseous dorsalis; so it doesn't matter where you put the needle if it's a LI4 by the book of the Yellow Emperor or an LI4 by the book of someone else in a different course, it doesn't matter where you put a needle in this region, you are right on a very rich area of small arterioles which have numerous sympathetic receptors and therefore is very reflexogenic.

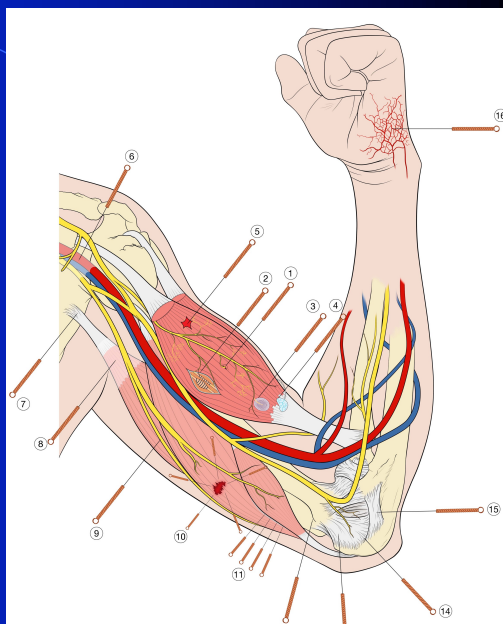
Also all of you are familiar with the reflexogenic power of PC-6 or Master of the Heart 6, depending on the countries and the language, is a neuro-stimulation site right over the median nerve and that results, among other things, in sympathetic changes of the heart, slowing the heart rate, but also helping to control nausea and vomiting in the first trimester of pregnancy.

That is not magic, that is not something that nature put a button there, no, that's simply, a neuroreflex that involves sympathetic fibers that are part of the median nerve, the median nerve being the most sympathetically reflex nerve. On the upper extremity, the same way in the lower extremity, this category it's going to belong to the sciatic nerve higher up, which really is two nerves, not one, the tibial nerve plus the fibular nerve, or on the fibular nerve. That's why Gallbladder 34, the universal point to modulate activity in the muscles, tendons, sinews works. Again, it's not magic, and again, it's not specific. It's a simple, good place for sympathetic modulation. In my career, I play with all this, and I've sometimes done things in a fastidious manner just to prove people my point.

I can make a shoulder move if I put a needle on the TCM joint. I can do the same, put in the needle in 20 different places. One of the myths of acupuncture, classical acupuncture, is specificity, while the majority of responses except for the local responses are segmental and super segmental and therefore there is no specificity and the fact that you use certain approach and you get results doesn't mean that you were right about your explanation, it means that you have touched relevant mechanisms. To me, the power of understanding neurofunctional acupuncture is that liberates yourself from any beliefs and also gives you tremendous freedom and, tremendous precision; there is no other system of acupuncture that's more precise and I'll show you why and how so let's go to all the categories.

## Neurofunctional Electroacupuncture: *Local inputs*

- motor points
- muscle belly (spindles,...)
- muscle-tendon (GTO)
- trigger points (motor)
- neuro-vascular bundles
- teno-periosteal junction
- peripheral nerve trunks
- healthy tissue, tight bands
- periosteum
- joint receptors (capsule,...)
- distal arteriolar networks



Once I understood this, then I categorized it. I said, okay let me see where can I put needles, locally at the peripheral segmental level. And I went and researched all the categories of sensory receptors, but also all the preferred access to the neuromotor system that gave me the ability to send an input, a powerful input, particularly an input that produced muscle contraction.

And also, almost in a hierarchical level, here it is the result of my empirical research and 30 years of practicing the method. The number one, if you tell me, okay, you can only treat your athletes doing one thing, it'll be a very easy choice. I would say I don't need LI-4, I don't need LR-3, I don't need GB-34, I need motor points.

Why? Because if I do a motor point... a motor point, by definition, is the area where the motor nerve penetrates the fascia and gets into the muscle fibers; and because it does that, it generates an area of lesser electrical resistance where less electrical stimulation triggers a depolarization, therefore a muscle contraction.

Motor points are very well known for many, many years. You can do a motor point by itself, without electricity, thus dry needling, which is a little bit barbaric, painful, and unnecessary when we have beautiful electrical stimulators, and you can do the whole thing painlessly and elegantly. But there's a whole system, dry needling, very popular in the world, particularly among physiotherapists due to historical reasons that I will not get into. Again, our method is superior, a motor point stimulation with electricity.

So motor points typically are consistent anatomically in every muscle. Some muscles have one motor point, some muscles have two or more, depending on the size of the muscle. For muscles that are round, the motor point is in the middle. If they're a little longer, typically then it's in the junction of the one-third proximal with the distal two-thirds. There are many anatomical studies in the last 50 years that have researched the location of motor points.

I have many of those and I use them. At the end of the day, finding motor points is a combination of knowing anatomically where they should be and then palpating and feeling. That's the typical difference in tissue pliability that happens because of the presence of that nerve fiber and typically because the nerve fiber there and the fact that the peripheral nerve is thick it is very easy to feel it after a while, after a period of just tentatively guessing, but even if you just know where it is or should be and just go there and when you feel something different put the needle, little by little you will find more consistently the motor points particularly the big ones, because there are other smaller motor points that you can describe as simply secondary motor points or one category that's in discussion and some people argue they don't exist, which is the trigger point. About the trigger point there's a whole series of books, two very thick books by Janet Travell and David Simmons, and those have been popularized as well among the physiotherapy profession mostly, but also among all health professionals. In recent years, it's been argued that the trigger points have no anatomical existence, which I don't disagree with, but definitely there are functional trigger points, meaning areas of hypersensitivity that, when stimulated, trigger sympathetic activity as well as referred pain, meaning pain in an unrelated area.

I studied Travell's book from cover to cover and, I used it extensively, and I actually developed some techniques inspired by the injection techniques proposed by Travell so and when people used to ask me in the old days, okay can you recommend an acupuncture book, my answer was always, well I can recommend you a book that's not per se an acupuncture book but I think it's going to be the most useful of all the books you can read and is the myofascial pain and dysfunction, the trigger point manual, volumes one and two; and you should read every day one muscle two muscles and little by little you will have a map of what it tells you; obviously not everything the book says is like religiously truth but it gives you a very good foundation, to understand the possible involvement of proximal structures into symptoms that are perceived distally. For instance, very common, the lateral epicondylar pain, pain felt around the lateral epicondyle of the elbow. Travell tells you that there's a trigger point on the supraspinatus muscle that mimics and triggers that. Because I've done a lot of palpation, I can tell you for a fact that there are myriad of patterns of referred pain.

Now, one problem we have in medicine, in science, is that we quickly like to categorize things into close, absolute categories, because that is intellectually soothing, while in actuality, even anatomy is generic. There are many anatomical variations in everything. Even the... structure of the muscle, the microstructure or even the macrostructure. Some muscles have an extra belly. Sometimes in the



shoulder girdle, particularly, there are extra muscles or missing muscles. And we're talking about the macroanatomy. The neuroanatomy is even more. There are more variations and you know that even internal organs, there are people with one kidney, there are people with weird things, you know, the more people, born, the more anatomical variations. So, let's not do that. Let's accept that we have to operate in an open architecture system where things are not written in stone. And trust me on this, if you find something in a patient, that is true. That is the truth. Even if it's the only person in the world that you press here and has pain on the baby toe on the contralateral foot. And let's not try to explain things 100% all the time, because it's not necessary. I mean, you know very well that, for instance, a person under stress will quickly manifest a myriad of somatic symptoms, pain, sharp pains here, shortness of breath, this, this, this, that. So, autonomic dysregulation by itself is a generator of symptoms.

In this case, my summarizing and this arm, by the way, I like very much, because I think I was able to represent here something that I always wanted to do, which is all these categories. But at the same time, you notice that I took the artistic liberty of making a micro structure macroscopic, such as the muscle spindle, which obviously is inaccurate but is visually powerful to remind us that needling the belly of the muscle is already a valuable technique and indeed anybody who puts needles in the muscle even if they put them randomly they're going to have some sort of response because they are going to engage, some of these mechanoreceptors.

Other areas that are highly reflexogenic, and that deserve attention in clinical practice, include the muscle tendon junction that has here represented a Golgi tendon organ as well as, near that area there are other mechanoreceptors such as Pacinian corpuscles and also there are receptors on the tenoperiosteal attachment so these are preferred areas to engage your needles with with the muscles and not with the muscles per se but with the nerves that innervate these muscles, the sensory and the motor, so preferred areas are going to be tenoperiosteal attachment, muscle tendon junction, belly of the muscle and then any tender spot on the muscle and the motor point, which typically is not tender. So numbers one, two, three, four, five are the the summary of all the categories of neurological innervation, also all the categories of neuro-reactive sites and what are the the most commonly associated nerve fibers type, of nerve fiber type of receptor.

With this if you now polish your needling and start doing your local local inputs more refined you will see another level of response. I mentioned to you that study in rats where the muscle contraction was necessary for the mean arterial pressure to lower and so they found that even in anesthetized rats muscle contraction was more powerful.

Also a very simple idea here is when you do muscle contraction, simultaneously you are triggering a myriad of sensory inputs because if the muscle contracts there's activation of the sensory receptors, like the muscle spindles, and there is activation of all the mechanoreceptors, Paccini and Ruffini, and Golgi tendon

organ; so when you contract a muscle simultaneously you put in motion all the sensory dimension that's why of all the inputs if you ask me what is your preferred input, I would tell you in no uncertain terms it is motor points to make the muscle jump painlessly at a frequency of 10 Hertz because I use a pointer plus which was not invented for this purpose but that I have recycled into an acupuncture needle stimulator and all our graduates in every country, Canada the United States, Spain, they've been using this technique and they are getting the Pointer Pluses into their treatment bag and indeed I always travel with two, like a good slinger. The military taught me that, two is one and one is none, and I could not work without my Pointer Plus so if you ask me okay if you only have one needle and one technique what you do most of the time, exceptions of course exist, I would focus my attention on a motor point and stimulate it electrically and that would give me simultaneously neuromodulation of the segment, sensory and motor, it would remove neuromotor inhibitions, it would reach the brain and trigger miscellaneous, central neurohumoral responses.

It truly is the closest thing to a magic act that you can do with the needles if you wish to do so but it's also a game I play and I asked my students to play which is, if you only have one needle where would you put it. Indeed, the first about 900 acupuncture treatments I perform, I already limited myself to five needles. Why? because I said okay if you're going to continue doing this, it is because you are going to understand it and if you're going to understand it you really have to be good at selecting, you cannot put 20 needles like people put, because I told myself you need to understand and you need to predict better the results. So I was obsessed with that, and I didn't allow myself to use electricity. Five needles, five minutes, and that was it. And even with that, I already got significant results and pushed me to the selection of the best targets and the refinement of the understanding.

Then the next 900 treatments, another year, my second year, I still limited myself, but then I allowed myself to use electricity. And that's when I started creating the foundation of what's now the Blueprints. And that's how I built my own system, by challenging things from day one and not postponing. Now, that's my curiosity and my way of doing things. I'm more of a researcher that way in my brain, although I'm a very good practitioner. My hands are very good, but that's something I discover very quickly. Later on. So I invite you to play this game, do less, and try to find out what has the best effect.

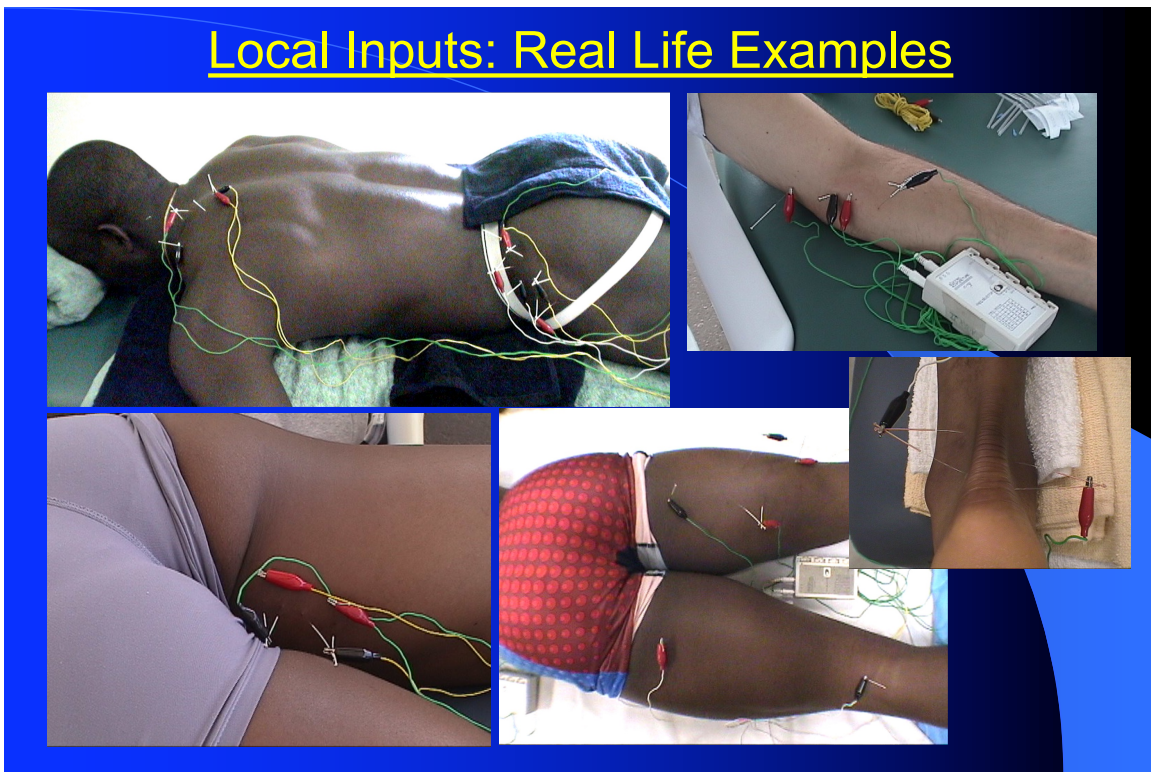
Now, other areas where we put needles that are very good targets involve any peripheral nerve, either together with a vessel, i.e. a neurovascular bundle, or simply a sensory branch or a motor branch. The fascia also is a good target. The space between the muscles, the interfascial areas, are good as well.

Healthy tissue surrounding damaged tissue, that's a very old approach, surrounding the dragon. It just makes sense because what you do is like a sort of PRP, if you wish. You just trigger slight damage, and a positive local responses. in an area that's very active because it's close to the damaged area.

Then you can put needles obviously into connective tissue associated with the joint, ligaments, capsule. The final area in which you can put needles is the distal arteriolar networks and that summarizes it all.

This arm contains all the acupuncture atlas you ever need. So if you know anatomy, I've already taught you all the insertion sites; you don't need meridians, you don't need categories, you need peripheral nerves and their receptor sites; and I can prove to you that wherever you put a needle that has an effect is because there is relevant innervation; the end. That admits no discussion, it can be done easily, daily and it's something that you truly need to embrace, from today, and start your transition to analyze things neurologically and then insert the needles neurologically because they'll have more effect than if you do it using any other system.

### Local Inputs: Real Life Examples



Local inputs real-life example and why it's important to embrace this model. For instance, I'll go here to this quadrant this lady which came to a championship that was world track and field indoor championship in Birmingham I believe in England sometime in the late 90s, I don't remember the year; and this lady had qualified but suffered what was labeled as a hamstring injury and because it was on the few days before the trip, they said well anyway go and that way you get treated. So she came and they asked me can you take a look at her she's not gonna compete but you know it would be great to start her rehab so I examine her and the first thing I concluded is that there's no hamstring injury, I'm very sorry but the people who diagnosed this, they lacked anatomy knowledge as the

muscle that is affected is the adductor magnus, the biggest deep muscle that we have in the body, the adductor magnus; also I didn't appreciate that it was really torn; it was spastic, it was suffering a little strain, but it didn't feel like it was anything major so I proceeded with this type of input and these are 75mm needles that are fully buried into her adductor magnus, proximally. Now, if you look at the acupuncture atlases, there are no meridian points here. Also, if you practice very traditional acupuncture, you don't even have 75 millimeter needles. I've been at the home of one of my friends in Belgium to teach a course, and I said, okay, give me 50mm, 75mm, and he said, what do you mean? I only use 30mm needles. I said, you're kidding me, so you've been doing acupuncture for 20 years and you only use 30's? He said, yeah, I just do acupuncture energetics. I said, okay, I'm very sorry, but you know what? There is a superior method, the same way that a gun is superior to a bow, and a motorbike is superior to a bicycle, deep needling is superior to superficial needling, because there are deep muscles that if you don't reach them, you're not going to be able to modulate activity there.

So this is a prime example of how having the right understanding and the right tool is so powerful because I put those needles there, you can see that they are connected to a double circuit with an ITO at low frequency, 1 to 2 Hz. I did that 10-12 minutes, I think I added some distal points for sympathetic modulation and probably I added some axial points. The fact is that after the first treatment, she says, oh my god, I feel like 80% better, this is ridiculous. I'd love to go and do some training, you know, still because my event is still far, you know, like next week, like there were six days we had; I said, by all means, go do it, come back, give me feedback. To make a long story short, this approach resulted in her being able to compete and win a silver medal.

A person who was discarded with the wrong diagnosis, number one, which is very common in pain problems, not just sports injuries, and then the right tool at the right depth, all based on anatomy and neuroanatomy. So this is the power of the system that I'm proposing you embrace.

This is another world-class sprinter during another event and this is to highlight one strategy that's very ancient also, but is very useful. Locality, as I described before, means that it's neurologically connected, and that includes the contralateral side, because when the signal arrives at the spinal cord, there is overlap between right and left. As you know, you can train one side one leg and the other leg will improve up to 15% in strength due to this cross innervation mechanisms so it's totally legit and advisable to stimulate the same nerves on the contralateral side, on the good side, like here; this is a sprinter with a long head of the biceps tear, and you can see it clearly where this is, probably it is day three or so from the injury and we already introduced electricity; here's the ITO at low frequency between a proximal point along the sciatic nerve (you can say it's BL-36, but who cares I will not use that nomenclature, I will just tell you that many of the traditional points obviously overlap with peripheral nerves but others don't; and they're valuable points such as this one from the adductor magnus that are not to be found anywhere so that's why you have to learn the gross anatomy and

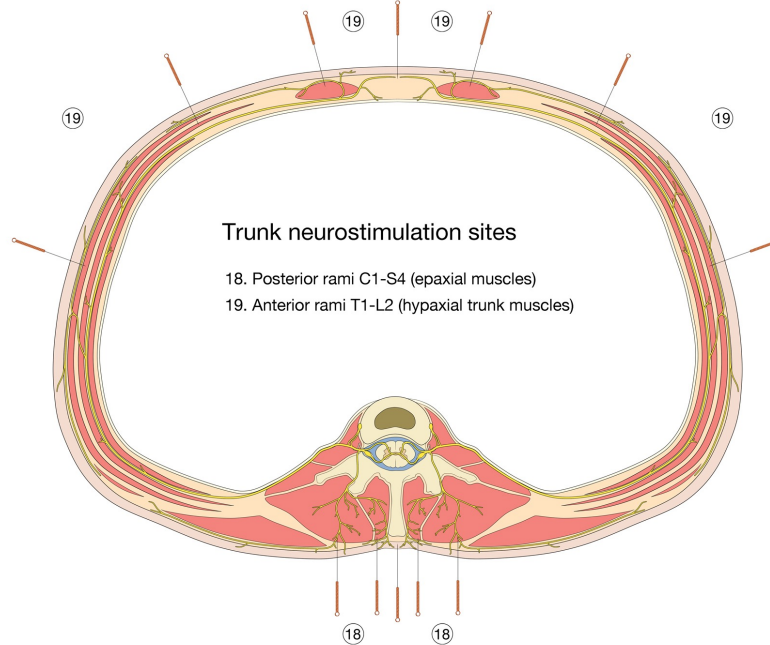
the anatomy of the peripheral nervous system. So here we have the proximal, the distal, which is in the short head of the biceps and these are just the four needles surrounding the injury that now is healed enough to tolerate electricity. And on the contralateral side, I do here, that would be again, BL-40, the tibial nerve, and here the sciatic nerve; the tibial nerve is one of the two components of the sciatic nerve. So really what we're trying to do is to send input along the same nerve, so the power of the segmental modulation is heightened.

These are some examples of how to profit from this knowledge. This also is a median nerves related issue. Well here the needles clearly go to the pronator teres muscle, to the two bellies and into the proximal attachment here on the humerus and then a couple of needles along the medial nerve itself, at low frequency. Inputs like these, all they require is the the palpatory skills and the knowledge of what is there and they're inputs that don't require a protocol, a book or nothing. You can make it, you know, it's a basic musical notes that you can play in your instrument once you know the notes.

Here he is my friend, Donovan Bailey, with whom I worked for many years until his retirement and how he used to love these inputs. These are 75mm needles all going into his gluteus maximus and medius and, his he always had a left side, overload and a tendency to cross the left shoulder and strain the para-scapular muscles and he loved this kind of input. This was done at 15 Hz, not 2 Hz, making the muscles jump and he would feel really activated after these inputs. Interestingly enough, years later and before the end of his career he torn the left Achilles unexpectedly during a pick-up basketball game with some friends and it's interesting because he always had issues on this side but never a day of complain on his Achilles and the first thing we knew is like is gone. Then, years later after retirement, and he continues to play basketball to this day, he torn the other Achilles which indicates some sort of issues specially on the L5, S1 segments, but also the fact that he's born Jamaican and lives in Canada where the sun doesn't shine a lot. So vitamin D deficit is a very common underlying cause for tendinopathies, tendon ruptures, and again I invite all of you to include that knowledge into your daily practice, how the metabolic dimension is so important.



# • Axial and Anterior Trunk Inputs



So just to wrap up today's, as I know you have to go back to work, I'm going to keep it a little shorter, this other one. We have the anterior inputs of the trunk, they're just done over the intercostal spaces. Obviously the needles are not put like this in the illustration, not perpendicular. I use the threading technique and the threading, the needle goes parallel to the wall.

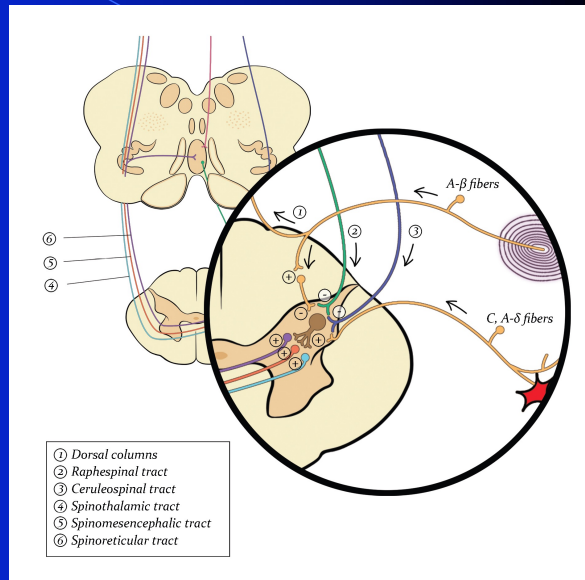
Actually, I have a video I'm willing to share with you, 58 minutes of discussion of techniques, needling techniques on the trunk, which I think would be very valuable for the profession, because it contemplates all the safety issues related to the pleura and related to the abdominal viscera. And so I will send that to Sze-Linn and she will create a link for you guys to access just this group.

Here it is the paravertebral musculature where the two divisions of the posterior primary rami, medial division, lateral division, can be found. And the most reflexogenic area is the one closer to the midline. So you have to choose an area to put needles on the back, I will go one thumb from the midline and I stay there. Nothing major to be added by going more lateral and the more lateral you go the riskier it is because the narrower (the thinner) the wall, particularly in the thoracic spine and the higher the risk of pneumothorax. When we reach the technical parts I will talk about pneumothorax to you and how to avoid it which is very very simple and it's an unfortunate adverse event that I think is almost 99% avoidable, as nothing is 100% avoidable but 99%.

## Spinal Segmental Neuromodulation

### NM of Nociception

Large-diameter primary afferent A $\alpha$ /A $\beta$  fibers can, via inhibitory interneurons, modulate the dorsal horn neurons that give rise to spinothalamic tract fibers



So here again the mechanisms that you know this is only a reiteration of the mechanisms we have already explained.

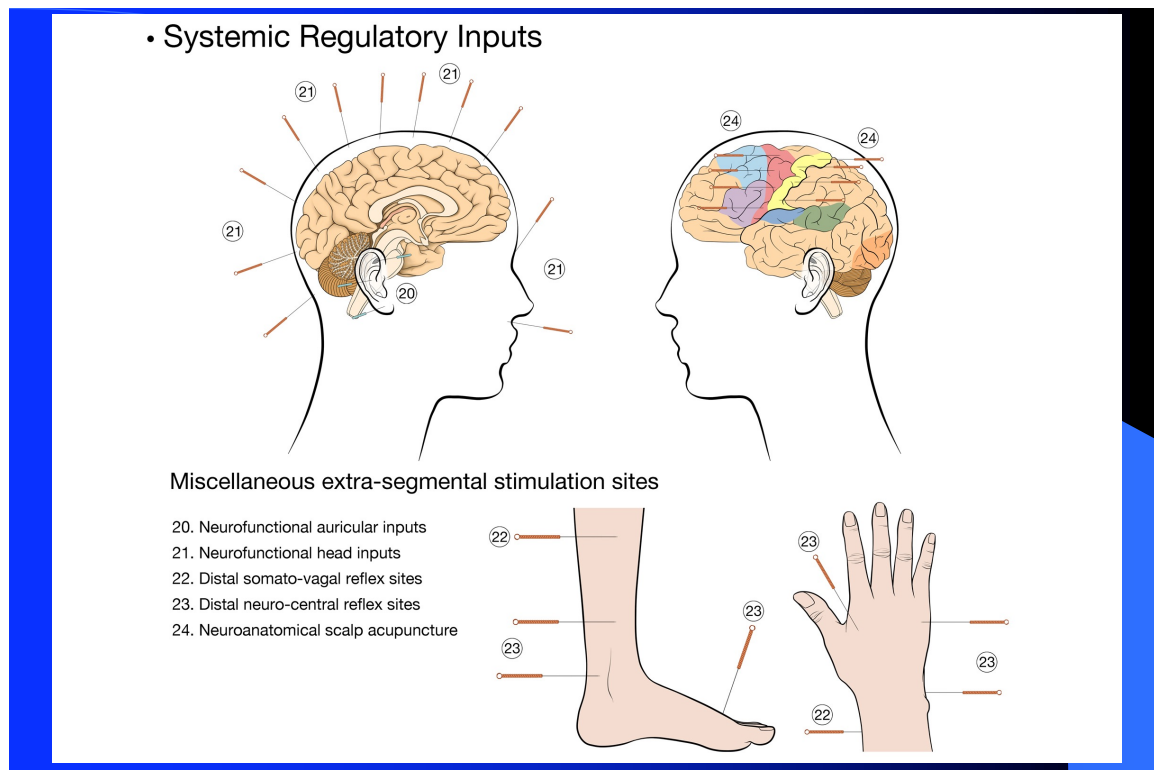
## Axial Inputs: Real Life Examples



And this is the example of how technically the axial inputs go: they always have two dimensions; I always put eight needles per axial input, four are going on the reflex sympathetic vascular level, in this case T10-L2, and then the other two go on the somatic relevant area.

So if there is a hamstring injury, I could choose anywhere from L4, L5, S1, S2, and then T10-L2 to modulate activity on the vessels. And then the use of the contralateral, here you can see the whole thing. And the combination of these axial inputs with the local inputs is the foundation of the method and what's given me tremendous success in the athletic community, the high performance.

In this picture you're seeing, this was a silver medalist in Sydney. This was a world record holder of the 100 meters. And this is Marla Runyan, she was a legally blind athlete, the first one to compete against fully able athletes. She was legally blind, she could see something but very little. She was a tremendous competitor and I had the privilege to work with her many years of her career.



Okay, and I'm going to leave it here because the systemic regulation is another chapter, and we're getting there and then after this we're going to go to the neurofunctional acupuncture blueprints which is the protocols based on the knowledge of articular innervation, area by area and really how can you maximize this knowledge and how can you implement technically all what we've been talking about; I needed to spend the time laying the foundation because it would have been otherwise impossible, I would have had to stop every five seconds and explain something. Now I will stop sharing and go back to the main screen and take your questions; we're getting there.

### **Q&A PART III**

#### **Opis Supplies (ETD)**

Thank you, Dr. Elorriaga. It was nice to have at least a little mini case presentation about some of the examples, um. To really kind of highlight how paying attention to some of the techniques you're talking about, how it can make such a difference in the treatment outcome.

#### **Dr. Alejandro Elorriaga**

We're getting there.

#### **Opis Supplies (ETD)**

Is it fair to say that your approach is more principally based versus a cookbook? For example, you treat two patients with similar pain differently.

#### **Dr. Alejandro Elorriaga**

Indeed, not only you treat similar presentations differently, you treat the same person differently every single time. One of my proposals is going to be that you revisit and sort of, uh, not re-diagnose, because you're not diagnosing, you are mapping. So, every time you re-map. To know where you are. It's like you take a car, and then you feel something. You tell the mechanic, the mechanic tweaks that, then you take the car out again, and then you feel something else, and so on and so forth. So, I'm a proponent of an open system. Freestyle, but the free is not free. It's the physiology, anatomy. Principle-based, and it has numerous rules that's what we're taking the time to review.

So, it's a challenge, and that's why I said before, I don't expect anybody to feel comfortable. I would not be doing my job if you feel comfortable, so by all means, enjoy your overall.

#### **Opis Supplies (ETD)**

And what's your experience with providing inputs for lumbar pain in pregnancy? Are there any trimester concerns?

#### **Dr. Alejandro Elorriaga**

Oh, that's an easy one. First of all, pregnancy is not a disease. That says it all. Pregnancy is a heightened physiologic and physiological state, where women are physiologically at their. Peak of adaptability, and therefore is the moment of least concern. To me, although culturally, we've medicalized pregnancy and come up with absurd notions and ideas that pregnant female mammals, human included can proceed and lead normally all throughout the pregnancy to the day of delivery. So please, don't be afraid. There are studies have been done trying, purposely, to trigger abortions, and it didn't work. There's a percentage of abortion, spontaneous abortion on the first trimester, and that's what's going to happen, whether the person receives or not acupuncture. It's a myth that you can trigger delivery. We've tried many times, and delivery comes when delivery wants to come. Trust me, we've done that, and our wives, the wives of friends, and we don't have that power, and we don't even yet understand the complex mechanisms under pregnancy and delivery.

#### **Opis Supplies (ETD)**

Do you find any need for needles longer than 75 millimeter...than the 3-inch needle?

**Dr. Alejandro Elorriaga**

When you deal with athletes 10 centimeters may be needed, even 12 for a technique that is not an acupuncture technique that I do, which is a lumbar plexus. Through the back. It's very safe, but, not everyone will feel comfortable doing. That would be my longest needle, is a lumbar plexus stimulation below L2, on the on the right, all three. Between L3 and L4, I use that needle, but I use one or two a year. The rest, 75 is my longest needle standard use.

**Opis Supplies (ETD)**

And I know you were talking about your limiting yourself, as a challenge, to just five needles in a treatment. Was that more to help you think outside the box?

**Dr. Alejandro Elorriaga**

First year. Yeah, was to... to push me to... to truly understand the value of what I was doing. Basically, I was testing the reflexogenic power of the different sites based purely in empirical evidence. So, people would tell me, oh, use this, use that, okay, very nice. I will, but I will, under my own testing. So, I'm a little bit like St. Thomas, you know. I need to see it. I need to touch it.

**Opis Supplies (ETD)**

And your concept of goal, targets, and inputs, does this concept minimize the need for a specific diagnosis, or just help with intervention once you have a diagnosis

**Dr. Alejandro Elorriaga**

Well, uh, the word diagnosis is quite misleading, because in actuality diagnosis needs a second word. You can have a lab diagnosis. You can have imaging diagnosis, you can have... functional diagnosis, you can have clinical diagnosis. What I'm proposing instead of a closed system of categories, that is not helpful in clinical practice. I'm proposing a mechanism-based that you apply to a neural mapping.

**Opis Supplies (ETD)**

And would you suggest a spinal manipulation technique before or after needling, or does it not matter?

**Dr. Alejandro Elorriaga**

Because nobody can claim that we really, really know. Talk to a neurologist. Ask a neurologist what multiple sclerosis is due to, what. At the end of the day, we know very little about truly what's going on in the human body. That's why, for most problems involving pain, we know that motor system is involved. We know that some sort of segmental dysfunction is involved.

So, I'm a proponent of a system that attaches as many relevant levels as possible. It's a sort of neurofunctional diagnosis, you can call it like that, and then, legally, I don't know, depending on your profession. Uh, that's why neural mapping, I think, is beautiful, because it's non-denominational. Very good question. I think the beauty of the needles and the neuromodulatory power and the restoration of perfusion is such that oftentimes the mobilization of the articular region happens spontaneously. Indeed, we have many chiropractors, graduates of my program at McMaster and all over the world.



They've reduced their manipulation by 80 to 90%. And although I learned osteopathy and chiropractic manipulation myself, I rarely, rarely use it, because what I do is, after the needles, I then use my soft tissue technique. And the mobilizations happen spontaneously. Safer.

### **Opis Supplies (ETD)**

Okay. And are you always doing bilateral body treatment? Is that important?

### **Dr. Alejandro Elorriaga**

I would say most of the time, but my treatments are very long, so I have time to do both, but there's nothing wrong with one day in a sequence of treatments to focus only on one side. I think there's nothing wrong with that, per se. But if you're gonna treat long-lasting issues, you need to do segmentally, at least bilaterally. So, my segmental input would be bilateral 90% of the time. Then, you can focus on one side only, one arm, one shoulder. But the segmental, bilateral, I find it's more useful.

### **Opis Supplies (ETD)**

So, if you are doing the one side, would you want to do the other side in close... timeline?

### **Dr. Alejandro Elorriaga**

I do it simultaneously, so I figure out a way, so even if I do it sideways, recumbent, you can put the needles bilaterally on the segmental. That's the beauty. For the lower, it's more comfortable to do it prone. I mean, we can talk technical things. But for the upper, you can do it perfectly on later recumbent position, no problem.

### **Opis Supplies (ETD)**

One more question. How effective has needling been for you with something like sciatica, which has a mechanical component from the disc bulge.

### **Dr. Alejandro Elorriaga**

There are two presuppositions in that question, so be careful how you phrase the question. Sciatica is a syndrome, it's a symptom. Meaning, there is pain, gluteal pain, and down the leg, which needs to be refined is not the same posterior pain. It stops behind the knee. Lateral pain that goes beyond the knee, etc. Let me share something with you that I already said day one. Pain is rarely mechanical. If there's a tissue that tolerates mechanical insult, it's the nerve. A question to all of you is how many of you right now have a numb tush? You've been sitting on it for... I don't know, an hour and a half, and you will sit even longer, and it's not numb.

So, that means that the nerves tolerate very well pressure, because the nerve has liquid, it's hydraulic, so it's incompressible. So by definition, the nerve is incompressible. Therefore mechanical origin is not... as frequent and as easy to find. There are experiments showing it. You need to choke a sciatic nerve to really trigger effects mechanically. Bulging disc means nothing in terms of cost-effect. 28% of people with bulging discs, never had a discomfort, and many people without bulging discs, they have sciatica. So, again, this is the product of Cartesian thinking and a structural model that I will slowly but surely demolish as we go along. Because I think it's a disservice to understand the neuromatrix. It's all here. It's not the disc, it's not the nerve. It's the brain. It's the neural matrix.

And the metabolic. So, we'll keep the conversation going.

**Opis Supplies (ETD)**

So you had mentioned that you tend to take a little bit longer for your treatments. What is your typical time of treatment?

**Dr. Alejandro Elorriaga**

Mine. Many, many hours. I do 3 to 6 hours, the same person, one day. That's it.

**Opis Supplies (ETD)**

In one day?

**Dr. Alejandro Elorriaga**

Yes, in one day. I developed a whole system that's called Performance Care versus Injury Care. Which is a more refined form of tune-up, where I would, in-depth go smaller areas, articular areas, deep muscles, superficial muscles, and use my soft tissue techniques integrated with electroacupuncture. And I can do 20 hours, 25 hours in a week in the same person. With great results. But that's a different conversation and a different thing. It doesn't matter. Some people kind of run ultramarathons. But you can't, so don't worry about it.

**Opis Supplies (ETD)**

When using the Pointer Plus, are there any benefits of higher intensity if you're already achieving a muscle contraction?

**Dr. Alejandro Elorriaga**

No, I don't believe so, because quickly, if you increase the intensity, you will trigger, nociceptive activation guaranteed. So that's why I always use my finger, because if you feel the amount of electricity, if it's comfortable for you, it's comfortable for the patient. If it bothers you, it bothers the patient. More intensity is not better.

**Opis Supplies (ETD)**

And I know that you've recommended a couple of books already, can you recommend. An electroacupuncture manual or workbook?

**Dr. Alejandro Elorriaga**

There are none really. No, I mean, it's an easy one, because the books are the anatomy and the physiology, and the neurology books.

Also, the... kinetic chains, there are some good books, French, that are translated in English from Kapanchi, Articular Anatomy. So first, learn the classical functional anatomy, and then go one level deeper and start to study intense integrity and microtenegrity, and I will develop, when I go into the neurofunctional operating system, I will put that on the table. Just, if anybody's not yet overwhelmed. Uh, they'll get there.

**Opis Supplies (ETD)**

Going back to the Pointer Plus, how long do you use the pointer Plus on one point at a time?

**Dr. Alejandro Elorriaga**

Very good question. That's not too long. I will show you when we do it, what is the criteria. But basically, whenever a smooth contraction is achieved, that shows that the cycle contraction relaxation. Has normalized itself, which usually is a biochemical normalization, which has to do with the reuptake of calcium. And something which is science-based, it's not research-based, but I've discussed with many physiologists. And the explanation is that, we force this contraction relaxation cycles, and once the calcium is available to put the actin, myosin molecules back into the position so they can shorten and lengthen, short and lengthen, then that's it. You know that you've achieved what you wanted. And that takes anywhere from 30 seconds to a couple of minutes.

But more closer to 30 seconds/40 seconds, not too long. We'll do it with a practical case.

**Opis Supplies (ETD)**

I think, um... from the number of questions that we've had today, I think people are really kind of getting into... this content to go deeper.

**Dr. Alejandro Elorriaga**

I'm very pleased. I think people are... paying attention, and um... I'm encouraging everyone to continue not to... Not to be overwhelmed, because the... right now, I understand there are many, many holes, but. Clarity will be achieved, uh. One time.

**Opis Supplies (ETD)**

And I also encourage people to go back if you need to review the Part 1 and Part 2. Those are also available for you to watch for free, if you'd like.

One last question before I let you go. So, once contraction relaxation cycle's regulated, how long does this last? Would motor pattern affect long-lasting effect?

**Dr. Alejandro Elorriaga**

Very smart question. I like that, I like people are thinking. Well, it lasts a long time. That's the short answer. The beauty of what we do in neuromodulation, responses; if the system is healthy. Because now, here, we have to go to the metabolic, we have to go whether it's a healthy nervous system, or there is demyelination, or... again, the quality of the response depends on the quality of the terrain, but in general, this restoration of neuromotor activity tends to last months in a person that is not athletically engaged, and weeks in a person who is athletically engaged. It's like, how long does it last a tune-up in a car? Well, if it's a racing car, it's gonna be less because of the level of performance and if it's just a normal car, it's gonna last, you know, several months.